IMPACT OF IN-PLANT HACCP IMPLEMENTATION ON FOOD ANIMAL PRODUCTION IN THE UNITED STATES

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The new United States Department of Agriculture (USDA) Food Safety and Inspection Service (FSIS) regulations, known as the *"Final Rule on Pathogen Reduction and Hazard Analysis and Critical Control Points (HACCP) Systems,"* were published on July 25, 1996. (a) The rule "makes clear that industry is responsible for producing and marketing products that are safe, unadulterated and properly labeled and packaged." The FSIS's role is to provide regulatory oversight and enforcement of the rule in meat and poultry establishments. The final rule mandates two key strategies: (1) HACCP systems to prevent chemical, physical, and microbial hazards; and (2) new performance measures in slaughter and processing plants to target and reduce the presence of pathogenic organisms in meat and poultry products.

On January 27, 1997, the FSIS began requiring that all meat and poultry slaughter and processing plants conduct microbial testing for generic *Escherichia coli* to verify process control for fecal contamination as well as write and implement standard operating procedures for sanitation. Beginning in 1998, establishments will be required to adopt and carry out their own HACCP systems, and slaughter plants and plants producing raw ground products must ensure their *Salmonella* contamination rate is below the current national baseline incidence determined by FSIS. HACCP plans must be implemented by January 26, 1998, for large establishments; January 25, 1999, for smaller establishments with 10 or more but fewer that 500 employees; and January 25, 2000, for very small establishments.

Section 417.2 of the rule entitled "Hazard Analysis and the HACCP Plan," requires that plants conduct a hazard analysis "to determine the food safety hazards reasonably likely to occur...before, during and after entry into the establishment."(b) The preamble of the rule describes the potential hazards that plants will need to consider during a hazard analysis. These hazards may arise from physical objects, natural toxins, zoonotic bacterial and parasitic organisms, other microbial contaminants, chemical contaminants including pesticides and drug residues, food additives, and hazards from food decomposition. With HACCP systems, slaughter plants must address substantial chemical, physical, and microbial hazards associated with animals entering their plants.

THE IMPACT OF THE HACCP RULE FOR VIOLATIVE RESIDUE CONTROL ON FOOD ANIMAL PRODUCERS

The need to ensure appropriate control of illegal (violative) chemical residues suggests that the receiving of live animals should be a Critical Control Point (CCP) for plants. An exception might be integrated production systems that may consider the first CCP to be on the farm. In the area of

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violative residue prevention, a hazard analysis would include considering any substantial residue hazards that may be associated with feed additives, animal drugs used in production, and pesticides or other chemicals to which the animals may have been exposed. Information needed to conduct this part of the hazard analysis might be obtained from various suppliers, from publicly available data, from historical establishment data, or other sources. Plants may need reasonable assurances from their animal suppliers to prevent violative residues, and have many options to consider in their hazard analysis and HACCP plan.(c)

For violative residue prevention, the pork production industry already has successfully incorporated HACCP concepts in the residue avoidance section of their educational quality assurance (QA) and good production practices program (National Pork Producers Pork Quality Assurance Program). This programs was developed in response to market pressure to prevent illegal residues in pork products. Residue avoidance programs incorporate guidelines recommended by the Food and Drug Administration Center for Veterinary Medicine. They stress the importance of keeping records, handling animal drugs properly, identifying medicated animals, educating all who medicate animals, and consulting veterinarians in medical treatment decisions. As a result of producers implementing voluntary programs, the incidence of violative residues in most animal classes is very low. Commodity groups describe many benefits when producers implement their voluntary QA and residue avoidance programs. Commodity groups also are considering the benefits of having HACCP-compatible plans for packers. It is generally agreed that voluntary producer programs, such as the Pork Quality Assurance Level 3 Program, when implemented, can provide packers the assurance that approved drugs have been used properly and industry standards are being adopted. To ensure preventive processes are followed, veterinarians might provide verification services to the packing and production industries. Each packing plant will determine what level of assurance from their suppliers will be necessary and what in-plant residue monitoring and verification testing is needed for residue control.

IN-PLANT CONTROL OF PATHOGENS AND THE POTENTIAL IMPACT ON FOOD ANIMAL PRODUCERS

As establishments address *Salmonella* as a human pathogen marker, present science limits their ability to write a risk-based HACCP plan ensuring pathogen reduction and control from the farm through slaughter. Animals presented to slaughter plants for processing are being reared and marketed under a wide variety of production practices. Currently, there is an inadequate understanding of the impact of these practices on priority human food borne pathogens.

FSIS has established and funded a pilot project with a national team of industry, academic and federal experts to assess pre-slaughter *Salmonella* risk reduction practices and their effect post-slaughter. The project demonstrates the feasibility of using diagnostic and intervention technologies for *Salmonella* reduction pre-slaughter. A model which assesses the level and frequency for *Salmonella* contamination at various production phases will be developed and the impact of these levels on carcass contamination will be determined. An analysis of the economics of such practices as well as the pathogen reduction potential pre-and-post slaughter will be provided. Researching the link between microbial pathogen reduction at the interface of live animals and slaughter plants is critical for several reasons: (1) to provide information about what could be reasonably done to reduce microbial pathogens originating at the food animal production level; (2) to help animal

producers determine the costs and benefits of implementing these pre-slaughter practices; and (3) to assist slaughter plants in determining where they can best reduce pathogens in their HACCP plans. An update on the pilot project is presented.

Food safety control points during production phases are also being located for zoonotic parasites, such as *Toxoplasma gondii* and *Trichinella spiralis*. A cooperative pilot project with the National Pork Producers Council and USDA is testing the feasibility of private veterinarians certifying trichina-safe farms. Accredited practicing veterinarians can provide verification services to producers as new HACCP-compatible systems are developed between plants and their suppliers.

SUMMARY

The USDA HACCP rule will provide the stimulus that will impact how some animals are marketed. National and international food safety concerns will continue to drive important and positive changes in relationships among producers, livestock markets, and packers. Meat and poultry establishments will develop HACCP plans to meet mandated food safety performance standards and will need assurance programs from their suppliers. Commodity animal production food safety and quality assurance programs will be increasingly important to packers. Food animal producers who are able to provide verifiable assurances to packers on the food safety status of their animals and production processes may have a marketing advantage. For violative residue prevention, the pork industry is developing a HACCP-compatible Pork Quality Assurance Program. To meet federally mandated microbial performance standards for *Salmonella* and other pathogens, slaughter establishments may consider the potential level of these pathogens presented in animals at slaughter. FSIS has funded a pilot project which will assess pre-slaughter *Salmonella* risk reduction practices and their effect post-slaughter. The pork industry has also funded a pilot project with USDA to develop a trichina-safe certification process for producers. These efforts will strengthen producers' access to markets and improve food safety.

REFERENCES

a) United States Government Printing Office. USDA Food Safety and Inspection Service: Final Rule on Pathogen Reduction and Hazard Analysis Critical Control Point Systems. 9 CFR Part 304, Federal Register, 25 July 1996, pp. 38805-38989.

b) United States Government Printing Office. USDA Food Safety and Inspection Service: Final Rule on Pathogen Reduction and Hazard Analysis Critical Control Point Systems. 9 CFR Part 304, Federal Register, 25 July 1996, p. 38824-25.

c) Buntain, B.J., 1997. The role of the food animal veterinarian in the HACCP era. Journal of the American Veterinary Medical Association, 210: No. 4, 492-495.